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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/796,819

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Koji Tanimoto

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09/21/2006

SoCAL IP LAW GROUP LLP
310 N. WESTLAKE BLVD. STE 120
WESTLAKE VILLAGE, CA 91362

EXAMINER

LIVEDALEN, BRIAN J

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/796,819

Applicant(s)

TANIMOTO ET AL.

Examiner

Brian J. Livedalen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to amendment filed 8/31/2006. Claims 1-41 are pending.

Claim Objections

Claim 12 recites the limitations "the monochrome light receiving element" and "the color light receiving element arrays." There is insufficient antecedent basis for this limitation in the claim.

Claim 37 recites the limitation "the enhanced first color image signals, second color image signals, and third color image signals." There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-15, 17-30, 32-37, 40, and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Cardot et al. (6831761).

In regard to claims 1 and 18, Cardot discloses (fig. 2A) an imaging system and its process for producing image signals having a first photoconverter (29r) having a first

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array of first light receiving elements (fig. 2B, 33), the first light receiving elements having first imaging regions, the first photoconverter for photoelectrically converting light of a first light quality (red light) from a source image for outputting signals by photoelectric conversion (column 3, lines 56-60); and a second photoconverter (27) distinct from the first photoconverter having a second array of second light receiving elements (fig. 2B, 31), the second light receiving elements having second imaging regions different from the first imaging regions of the first light receiving elements, the second photoconverter for photoelectrically converting light of a second light quality (greyscale) from the source image for outputting signals by photoelectric conversion (column 3, lines (column 3, lines 56-60).

In regard to claims 2 and 19, Cardot discloses (fig. 2B) that the first light receiving elements have a first dimension (width) in a first direction, the second light receiving elements have a second dimension (width) in the first direction the first dimension is different from the second dimension (column 3, lines 61-67).

In regard to claims 3 and 20, Cardot discloses that the first direction is a main scanning direction (horizontal direction with respect to the document).

In regard to claims 4 and 21, Cardot discloses that the first direction is a sub-scanning direction (vertical direction with respect to the document).

In regard to claims 5 and 22 Cardot discloses that the first light receiving elements have a third dimension (length) in a second direction, the second light receiving elements have a fourth dimension (length) in the second direction, the third dimension is different from the fourth dimension (column 3, lines 61-67).

In regard to claims 6 and 23, Cardot discloses that the first dimension is larger than the second dimension and the third dimension is larger than the fourth dimension (column 3, lines 61-67).

In regard to claims 7 and 24, Cardot discloses that the first imaging region is determined according to a first sensitivity of the first light receiving elements to the first light quality; the second imaging region is determined according to a second sensitivity of the second light receiving elements to the second light quality (column 3, line 56 – column 3, line 10).

In regard to claims 8 and 25, Cardot discloses that the first array has a first number of first light receiving elements and the second array has a second number of light receiving elements and the second number is larger than the first number (column 3, lines 61-67).

In regard to claims 9 and 26, Cardot discloses (fig. 2A) that the first light quality includes a first color and the second light quality includes black and white; and the image sensor has a third photoconverter (29g) having a third array of third light receiving elements (fig. 2B, 33) having third imaging regions, the third photoconverter for photoelectrically converting light of a third light quality (green light) from the source image for outputting signals by photoelectric conversion, the third light quality having a second color different from the first color; and the image sensor has a fourth photoconverter (29b) having a third array of fourth light receiving elements (fig. 2B, 33) having fourth imaging regions, the fourth photoconverter for photoelectrically converting light of a fourth light quality (blue light) from the source image for

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outputting signals by photoelectric conversion, the fourth light quality having a third color different from the first color and the second color (column 3, lines 56-67).

In regard to claims 10 and 27, Cardot discloses (fig. 2A) that the first imaging region, the third imaging region, and the fourth imaging region have substantially equal area (column 3, lines 61-67).

In regard to claims 11 and 28, Cardot disclose that the second number is an integer multiple of the first number (column 3, lines 61-67).

In regard to claim 12, Cardot discloses (fig. 3) an output constitution capable of outputting electric signals generated by photoconverters serially in parallel (column 4, lines 30-45).

In regard to claim 13, Cardot discloses that the system has a color mode, wherein the image sensor outputs color signals and monochrome signals (column 6, lines 30-41).

In regard to claim 14 and 29, Cardot discloses a color signal correction unit for improving a quality of the color signals using information in the monochrome signals (abstract, column 6, lines 36-60).

In regard to claim 15 and 30, Cardot discloses that the color signal correction unit is further for improving the signals' resolution (abstract).

In regard to claim 17 and 32, Cardot discloses that the color signals are of three primary colors and the color signal correction unit is for converting the three primary color signals and the monochrome signals to data indicating color characteristics (abstract, column 5, lines 22-28).

In regard to claim 34, Cardot discloses that the first color is red, the second color is green, and the third color is blue.

In regard to claim 35, Cardot discloses that the first, second, and third color image signals represent image information for a first number of pixels, and the monochrome image signals represent image information for a second number of pixels, and the second number is larger than the first number.

In regard to claim 36, Cardot discloses (fig. 4) improving the image quality by obtaining brightness signals from the monochrome image signals, obtaining a first color difference signal (Cr) from the first, second, and third color image signals, obtaining a second color difference signal (Cb) from the first, second, and third color image signals, obtaining enhanced first color image signals (Cr from 67B) from the brightness signals and the first difference signals, obtaining enhanced second color image signals (Cb from 67B) from the brightness signals, the first color difference signals and the second color difference signals, and obtaining enhanced third color image signals (y from 67B) from the brightness signals and the first color difference signals (column 6, lines 41-60).

In regard to claim 37, Cardot discloses that the enhanced first color image signals, the second color image signals, and third image signals have improved resolution over the first, second and third image signals (column 2, lines 56-58, column 6, lines 15-42).

In regard to claim 40, Cardot discloses (fig. 2A) an image sensor having a first sensor (27) for photoelectrically converting light from a source image for outputting signals by photoelectric conversion and having a first array of n light receiving elements

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(fig. 2B, 31) having first imaging regions, and m output terminals (column 3, line 56 – column 4, line 10); a second sensor (29r, 29g, 29b) distinct from the first sensor for photoelectrically converting light from the source image for outputting signals by photoelectric conversion and having a second array of j light receiving elements (fig. 2B, 33) having second imaging regions, k output terminals; wherein m is greater or equal to k if n is greater than j (column 3, line 56 – column 4, line 10).

In regard to claim 41, Cardot discloses (fig. 2A) an image reading apparatus sensor (27) for photoelectrically converting light from a source image for outputting signals by photoelectric conversion and having a first array of n light receiving elements (fig. 2B, 31) having first imaging regions (column 3, line 56 – column 4, line 10); a second sensor (29r, 29g, 29b) distinct from the first sensor for photoelectrically converting light from the source image for outputting signals by photoelectric conversion and having a second array of j light receiving elements (fig. 2B, 33) having second imaging regions (column 3, line 56 – column 4, line 10); a first clock frequency for driving the first sensor, a second clock frequency for driving the second sensor, wherein the first clock frequency is greater than the second clock frequency when $n > j$ (column 4, lines 1-3, column 5, lines 4-21).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16, 31, 38, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardot et al. (6831761).

In regard to claims 16, 31, and 38, Cardot discloses an apparatus and process as set forth above. Cardot discloses enhancing resolution but is not explicit regarding improving gradation. However, it would have been obvious to one of ordinary skill in the art to also improve the image gradation in order to improve the overall quality of the generated image.

In regard to claim 39, Cardot discloses (fig. 2A) an image reading apparatus having a first sensor (27), which has a first sensitivity, a second sensor (29r), which has a second sensitivity; and a control circuit (fig. 3, 39) that drives the second sensor at twice the rate of the first sensor (column 4, lines 45-47). Cardot does not explicitly state that the second sensor has a shorter light receiving time or a higher sensitivity. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the light receiving time of the second sensor shorter and the sensitivity greater in order to allow the fastest processing possible for a signal with high resolution since the second sensor is driven at a greater rate than the first sensor and has a greater resolution than the first sensor.

Response to Arguments

Applicant's arguments filed 8/31/2006 have been fully considered but they are not persuasive.

With respect to claims 1-15, 17-30, 32-37, 40, and 41, Applicant asserts that Cardot fails to disclose two photoconverters that are “distinct.” However, Cardot discloses 4 linear CCD sensors. The greyscale CCD sensor is driven at a different rate so that the four rows do not operate as one matrix-type array. See column 4, lines 45-47. Furthermore, the term “distinct” does not infer that the photoconverters have to operate using completely different circuitry. The term “distinct” only implies that the two items are distinguishable or discrete. For instance, even two pixels can be considered “distinct” because they are discrete elements. The fact that they might share some circuitry is irrelevant; therefore, the rejection is proper.

In regard to claims 16, 31, and 38, Examiner recognizes that Cardot is silent regarding improving gradation. Examiner does not contend otherwise. Examiner merely asserts that it would have been obvious to want to also improve gradation in forming a high-resolution image. Therefore, the rejection is proper.

In regard to claim 39, Examiner concedes that Cardot is silent regarding the specific sensitivity and light receiving duration of the sensors. However, the relationship between the sensitivities and the light receiving periods of the sensors would be obvious in view of the setup disclosed by Cardot because Cardot discloses driving the sensors at different speeds and producing signals with different resolutions. Therefore, the rejection is proper.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

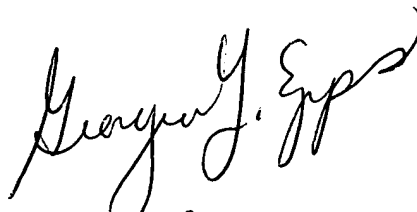
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Livedalen whose telephone number is (571) 272-2715. The examiner can normally be reached on 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

bjl


Georgia Epps
Supervisory Patent Examiner
Technology Center 2800